



Brain International School

Vikas Puri, New Delhi

ASSIGNMENT NO. 1

SUBJECT: BIOLOGY

CLASS-XII

APRIL, 2025

Chapter :1 Sexual reproduction in flowering plants

MULTIPLE CHOICE QUESTIONS

1. Which part of the embryo sac nourishes the developing embryo?

- a) Synergids
- b) Antipodal cells
- c) Egg cell
- d) Central cell

2. Which hormone is responsible for the development of fruits from the ovary after fertilization?

- a) Auxin
- b) Cytokinin
- c) Gibberellin
- d) Ethylene

3. The transfer of pollen grains from the anther to the stigma of the same flower is which type of pollination?

- a) Geitonogamy
- b) Cross-pollination
- c) Cleistogamy
- d) Autogamy

4. The edible part of the mango fruit is the:

- a) Mesocarp
- b) Epicarp
- c) Endocarp
- d) Seed

5. Which of the following is a non-endospermic seed?

- a) Corn
- b) Pea
- c) Coconut
- d) Sunflower

Assertion-Reason Questions:

1.Assertion: Exine of a pollen grain is made up of sporopollenins which are resistant to high temperatures, strong acids or alkali as well as enzymatic degradation.

Reason: Sporopollenins are absent in the region of germ pores.

2. Assertion: Geitonogamy is genetically similar to autogamy.

Reason: The pollen grains come from same plant.

3. Assertion: Cleistogamous flowers produce assured seed set in the absence of pollinators.

Reason: These flowers do not open at all.

4. Assertion : Pollen mother cells (PMCs) are the first male gametophytic cells.

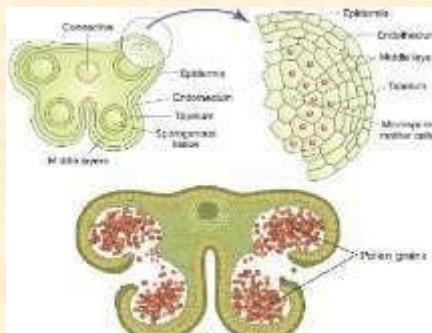
Reason : Each PMC gives rise to two pollens.

Short Answer Type Questions [2 Marks]

1. State two differences between perisperm and pericarp.
2. Draw LS of anatropous ovule of an angiosperm.
3. List different devices which flowering plants have developed to discourage self-pollination.
4. Is pollination and fertilisation necessary in apomixes? Give reasons.
5. Why does zygote begin to divide only after the division of primary endosperm nucleus?
6. Suggest two advantages to a farmer of using apomictic seeds of hybrid varieties.

CASE STUDY BASED QUESTIONS

A typical anther is bilobed, dithecal and tetrasporangiate. Pollen Grain develop inside the microsporangia. Four wall layers, epidermis, endothecium, middle layer and tapetum surround the microsporangium. Cells of the sporogenous tissue lying in the centre of the microsporangium undergo meiosis to form tetrads of microspores.



- (a) A dithecous anther of an angiospermic plant species has 100 microspore mother cells in each of its microsporangia. How many pollen grains can this anther produce?
- (b) State the reason, why pollen grains lose their viability when the tapetum in the microsporangium is malfunctioning?

Can you think of the reason how tapetal cells would become binucleate?

OR

Arrange the following terms in the correct developmental sequence:

Pollen grain, sporogenous tissue, microspore tetrad, pollen mother cell, male gametes

Long Answer Type Question [5 Marks]

1. Draw a labelled schematic diagram of the transverse section of a mature anther of an angiosperm plant.
2. i) Name the organic material exine of the pollen grain is made up of. How is this material advantageous to pollen grain?
(ii) Still it is observed that it does not form a continuous layer around the pollen grain. Give reason.
(iii) How are 'pollen banks' useful?
3. Draw a labelled diagram of a section of an enlarged view of microsporangium of an angiosperm.

Chapter:2 Human Reproduction

MULTIPLE CHOICE QUESTIONS

1. **Ovulation in the human female normally takes place during the menstrual cycle.**
 - a) At the mid secretory phase
 - b) just before the end of the secretory phase
 - c) At the beginning of the proliferative phase
 - d) at the end of the proliferative phase.
2. **If mammalian ovum fails to get fertilised, which one of the following is unlikely?**
 - a) Corpus luteum will disintegrate.
 - b) Progesterone secretion rapidly
 - c) Estrogen secretion increases.
 - d) Primary follicle starts developing.
3. **Which part of the sperm plays an important role in penetrating the egg membrane?**
(a) Allosome (b) Tail (c) Autosome (d) Acrosome
4. **In human adult female's oxytocin –**

- a) stimulates pituitary to secrete vasopressin
- b) causes strong uterine contractions during parturition
- c) is secreted by anterior pituitary
- d) stimulates growth of mammary gland

5. Spot the odd one out from the following structures with reference to the male reproductive system.

- (a) Rete testis (b) Epididymis (c) Vasa efferentia (d) Isthmus

6. How many sperms are formed from 4 primary spermatocytes?

- (a) 4 (b) 1 (c) 16 (d) 32

7. In spermatogenesis, reduction division of chromosome occurs during conversion of -

- a) spermatogonia to primary spermatocytes.
- b) primary spermatocytes to secondary spermatocytes
- c) secondary spermatocytes to spermatids
- d) spermatids to sperms.

Assertion-Reason Questions

1. **Assertion:** Seminiferous tubule is lined by male germ cells and Sertoli cells.

Reason: Seminiferous tubule is structural and functional unit of testes.

2. **Assertion:** The inner lining of the uterus is endometrium.

Reason: The endometrium undergoes cyclical changes during menstrual cycle.

3. **Assertion:** The spermatids are transformed into sperms during spermiogenesis.

Reason: Mitosis and meiosis are involved during spermiogenesis.

4. **Assertion:** The human sperm is a microscopic structure composed of head, neck, middle piece and tail.

Reason: The functions of male accessory ducts and glands are maintained by Androgens.

5 **Assertion:** The embryo with 8 to 16 blastomeres is called morula.

Reason: The cells of morula are arranged into an outer layer called trophoblast and an inner group of cells called inner cell mass.

CASE BASED QUESTIONS

Read the following passage and answer questions: The process of formation of a mature female gamete is called oogenesis. Oogenesis is initiated during the embryonic development stage when a couple of million gamete mother cells (oogonia) are formed within each foetal ovary; no more oogonia are formed and added after birth. These cells start division and enter prophase-I of the meiotic division and get temporarily arrested at that stage, called primary oocytes. Each

primary oocyte then gets surrounded by a layer of granulosa cells and is called the primary follicle. Many of these follicles degenerate during the phase from birth to puberty. Therefore, at puberty only 60,000-80,000 primary follicles are left in each ovary. The primary follicles get surrounded by more layers of granulosa cells and a new theca and are called secondary follicles.

1. Find out the correct statement

- a) Primary follicle is with oogonia
- b) Primary follicle is with primary oocyte
- c) Secondary follicle is with secondary oocyte.
- d) Tertiary follicle is with primary oocyte without antrum.

2. i. Primary follicles are surrounded by many layers of granulosa cells & theca

ii Secondary follicles are surrounded by theca.

iii. Antrum is formed at Tertiary follicle stage.

The correct combinations....

- a) Only I b) Only ii c) Only iii d) i, ii & iii only

3. Assertion (A): Primary oocyte completes its first meiotic division in tertiary follicle.

Reason (R): Antrum develops during secondary follicular stage.

- a) A and R are true, and R is the correct explanation of A
- b) A and R are true, and R is not the correct explanation of A
- c) A is true, R is false
- d) A is false, R is true

4. Read the following & arrange them in a sequence

- a) Ova b) Oogonia c) Primary oocyte d) Secondary oocyte e) Graffian follicle

- a) a-c-b-d-e b) c-d-e-a-b
d) b-d-c-e-a d) b-c-d-e-a

Long Answer Type Question [5 Marks]

1. (a) Draw a diagram of a human sperm. Label any four parts and write their functions.

(b) In a human female, probability of an ovum to get fertilized by more than one sperm is impossible. Give reason.

2. The figure below shows the sequence of changes within the ovary that occur during the menstrual cycle.

- a) Name the process A. Name the hormone that plays an important role during this event.
- b) Identify B and name the hormone that regulates the maturation of B.



c) Identify D and mention the function of same.

3. a) Explain the menstrual phase in a human female. State the levels of ovarian and pituitary hormones during this phase.
- b) Why is follicular phase in the menstrual cycle also referred as proliferative phase? Explain.
- c) Explain the events that occur in a graafian follicle at the time of ovulation and thereafter.
- d) Draw a graafian follicle and label antrum and secondary oocyte.